



Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ़”

Jawaharlal Nehru

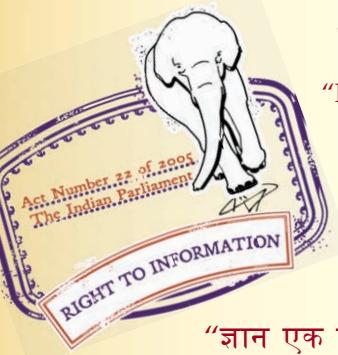
“Step Out From the Old to the New”

IS 8014 (1983): Classification and nomenclature of dyeing and finishing machinery [TXD 21: Dyeing, Finishing and Allied Machinery and Accessories]

“ज्ञान से एक नये भारत का निर्माण”

Satyanaaranay Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartṛhari—Nītiśatakam

“Knowledge is such a treasure which cannot be stolen”



BLANK PAGE



PROTECTED BY COPYRIGHT

Indian Standard

CLASSIFICATION AND NOMENCLATURE OF DYEING AND FINISHING MACHINERY

(First Revision)

UDC 677.057.001.3 : 001.4



© Copyright 1983

INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Indian Standard

CLASSIFICATION AND NOMENCLATURE OF DYEING AND FINISHING MACHINERY

(First Revision)

Dyeing and Finishing Machinery Sectional
Committee, TDC 45

Chairman

SHRI SURESH M. MEHTA

Members

DR (KUMARI) M. D. BHAVSAR

SHRI K. S. DESIKAN

SHRI M. D. DIXIT

SHRI A. M. DOSHI

SHRI S. R. MITRA (Alternate)

SHRI KIRTI GANDHI

SHRI S. V. GOKHALE

PROF G. W. JOSHI

SHRI K. D. GAWAND (Alternate)

SHRI V. N. JOSHI

SHRI S. C. PAREKH (Alternate)

SHRI R. S. KOSHTI

SHRI P. V. KRISHNAJEE

SHRI KIRAN P. LALANI (Alternate)

SHRI R. G. KULKARNI

SHRI S. V. LATHIA

SHRI YOGEN S. LATHIA (Alternate)

SHRI R. H. MEHRA

SHRI N. S. MEHTA

SHRI SURYAKANT P. MEHTA

SHRI M. S. YAGNIK (Alternate)

Representing

Primatex Machinery Pvt Ltd, Bombay

The Silk & Art Silk Mills' Research Association, Bombay

Office of the Textile Commissioner, Bombay

The Bombay Textile Research Association, Bombay

Textiles Committee, Bombay

Harish Textile Engineers Pvt Ltd, Bombay

Ahmadabad Textile Industry's Research Association, Ahmadabad

Victoria Jubilee Technical Institute, Bombay

The Morarjee Goculdas Spg & Wvg Co Ltd, Bombay

The Delhi Cloth & General Mills Co Ltd, Delhi
Mather and Platt (India) Ltd, Bombay

Association of Merchants & Manufacturers of
Textile Stores & Machinery (India), Bombay

Lathia Rubber Manufacturing Co Pvt Ltd, Bombay

Auxichem, Bombay

Star Industrial & Textile Enterprises Ltd, Bombay

Textile Machinery Manufacturers' Association
(India), Bombay

(Continued on page 2)

© Copyright 1983

INDIAN STANDARDS INSTITUTION

This publication is protected under the *Indian Copyright Act (XIV of 1957)* and reproduction in whole or in part by any means except with written permission of the publisher shall be deemed to be an infringement of copyright under the said Act.

(Continued from page 1)

Members

SHRI PRABIN MITRA
SHRI SUBASH NAIK
SHRI B. R. PATEL

SHRI S. P. PATEL (*Alternate*)
SHRI N. M. PATEL
SHRI D. P. PATIL
SHRI B. M. PATKI

REPRESENTATIVE
SHRI P. M. RESHAMWALA
SHRI K. G. SHAH

SHRI SUMAN C. SHAH
SHRI VIPINCHANDRA RATILAL
PARIKH (*Alternate*)
SHRI T. K. WALI
DR M. G. SALUKARE (*Alternate*)
SHRI S. M. CHAKRABORTY,
Director (Tex)

Representing

Jiyajeerao Cotton Mills Ltd, Gwalior
SBM Engineering Products Private Ltd, Bombay
The Ahmedabad Textile Mills' Association,
Ahmadabad

Silk & Art Silk Mills' Association Ltd, Bombay
The Century Spg & Mfg Co Ltd, Bombay
The Bombay Dyeing & Manufacturing Co Ltd,
Bombay

Indian Woollen Mills' Federation, Bombay
The Khatau Makani Spg & Wvg Co Ltd, Bombay
The Ahmedabad Manufacturing and Calico Print-
ing Co Ltd, Ahmadabad
T. Maneklal Manufacturing Co Ltd, Bombay

The Hindoostan Spg & Wvg Mills Ltd, Bombay

Director General, ISI (*Ex-officio Member*)

Secretary

SHRI R. K. DUA
Deputy Director (Tex), ISI

Indian Standard

CLASSIFICATION AND NOMENCLATURE OF DYEING AND FINISHING MACHINERY

(First Revision)

0. FOREWORD

0.1 This Indian Standard (First Revision) was adopted by the Indian Standards Institution on 10 January 1983, after the draft finalized by the Dyeing and Finishing Machinery Sectional Committee had been approved by the Textile Division Council.

0.2 This standard was first published in 1976 and has been revised to bring it in line with ISO 1506-1982 'Textile machinery — Dyeing, finishing and allied machinery — Classification and nomenclature', issued by the International Organization for Standardization. This standard will help eliminating ambiguity arising from local classification of dyeing and finishing machinery.

0.3 In the field of dyeing and finishing equipment a distinction is drawn between machines and apparatus. In the majority of the cases uniformity of treatment is obtained in machines by the movement of the goods, whereas in apparatus it necessitates circulation of the liquor in the bath.

0.4 Complete installations or complex machines comprising several types of basic equipment listed in the nomenclature have not been considered in this standard.

1. SCOPE

1.1 This standard gives classification and nomenclature for machines and apparatus used in the bleaching, dyeing, printing and finishing industries, classified, as far as possible, by the operations for which they are intended.

2. BROAD CLASSIFICATION

2.1 For the purpose of classification, dyeing and finishing machinery has been divided into the following groups:

<i>Group No.</i>	<i>Machinery Covered</i>
1	Equipment for singeing, scouring, bleaching and mercerizing
2	Equipment for washing
3	Equipment for special processes for wool (carbonizing, presetting, smoothing, chlorination, non-felting processes) and for heat treatment for synthetic textiles (setting and shaping)
4	Dyeing equipment
5	Printing equipment
6	Equipment for colour fixation by steaming and thermosol treatment
7	Drying equipment
8	Equipment for wetting and damping
9	Finishing equipment
10	Machines for measuring, inspecting, marking and packing
11	Additional equipment

3. DETAILED CLASSIFICATION AND NOMENCLATURE

CLASSIFICATION No.	NOMENCLATURE	CLASSIFICATION No.	NOMENCLATURE
1	EQUIPMENT FOR SINGEING, SCOURING, BLEACHING AND MERCERIZING	1.2.1.2	Autoclaves
1.1	Equipment for singeing¹⁾	1.2.1.2.1	— for material in open width
1.1.1	<i>Flame singeing</i>	1.2.1.2.2	— for slivers and tow
1.1.1.1	— by gas	1.2.1.2.3	— for yarns
1.1.1.2	— by liquid fuel	1.2.1.2.3.1	... in hank form
1.1.2	<i>Contact singeing</i>	1.2.1.2.3.2	... on cheeses or cones
1.1.2.1	<i>Plate singeing</i>	1.2.1.2.3.3	... in warp form
1.1.2.1.1	— electrically heated	1.2.1.2.4	— for woven and knitted fabrics
1.1.2.1.2	— gas heated	1.2.1.2.4.1	... in rope form (Kier)
1.1.2.1.3	— liquid fuel heated	1.2.1.2.4.2	... in open width
1.1.2.2	<i>Singeing by cylinders</i>	1.2.2	<i>Machines for scouring</i>
1.1.2.2.1	— electrically heated —	1.2.2.1	Machines for impregnating
1.1.2.2.2	— gas heated —	1.2.2.1.1	— in rope form (for example, saturators for fabric in rope form)
1.1.2.2.3	— liquid fuel heated —	1.2.2.1.2	— in open width (padding mangles, saturators for fabric in open width)
1.2	Equipment for scouring	1.2.2.2	Machines for storage and reaction
1.2.1	<i>Apparatus for scouring (kier boiling)</i>	1.2.2.2.1	— in rope form (J Box)
1.2.1.1	<i>Open kiers</i>	1.2.2.2.2	— in open width without batching
1.2.1.1.1	— for loose material	1.2.2.2.2.1.1	... in saturated steam without pressure
1.2.1.1.2	— for slivers and tow	1.2.2.2.2.1.2	... with plaiting in a J Box
1.2.1.1.3	— for yarn	1.2.2.2.2.1.3	... with plaiting on a conveyor
1.2.1.1.3.1	... in hank form	1.2.2.2.2.2	... with passage over rollers in a zigzag course
1.2.1.1.3.2	... on cheeses or cones	1.2.2.2.2.2.1	... in saturated steam under pressure
1.2.1.1.3.3	... in warp form	1.2.2.2.2.2.2	... with plaiting in a J Box
1.2.1.1.4	— for woven and knitted fabrics	1.2.2.2.2.2.3	... with plaiting on a conveyor
1.2.1.1.4.1	... in rope form	1.2.2.2.2.3	... with passage over rollers in a zigzag course
1.2.1.1.4.2	... in open width	1.2.2.2.2.3.1	... in superheated steam
	1) Singeing of fabric for gassing of yarns see the document dealing with spinning machinery.		... with plaiting in a J Box

CLASSIFICATION No.	NOMENCLATURE	CLASSIFICATION No.	NOMENCLATURE
1.2.2.2.2.3.2	... with plaiting on a conveyor	1.3.1.2.2	— for slivers and tow
1.2.2.2.2.3.3	... with passage over rollers in a zigzag course	1.3.1.2.3	— for yarns
1.2.2.2.2.3	— in open width with batching (pad roll)	1.3.1.2.3.1	... in hanks
1.2.2.2.2.3.1	... in saturated steam without pressure	1.3.1.2.3.2	... on cheeses or cones
1.2.2.2.3.1.1	... continuous	1.3.1.2.3.3	... in warp form
1.2.2.2.3.1.2	... discontinuous	1.3.1.2.4	— for woven and knitted fabrics
1.2.2.2.2.3.2	... in saturated steam under pressure	1.3.1.2.4.1	... in rope form
1.2.2.2.2.3.2.1	... continuous	1.3.1.2.4.2	... in open width
1.2.2.2.2.3.2.2	... discontinuous	1.3.2	<i>Bleaching machines</i>
1.2.2.2.2.3.3	... in superheated steam	1.3.2.1	Machines for impregnating
1.2.2.2.2.3.3.1	... continuous	1.3.2.1.1	— in rope form (for example saturators for fabrics in rope form)
1.2.2.2.2.3.3.2	... discontinuous	1.3.2.1.2	— in open width (padding mangles saturators for open width materials)
1.2.2.3	Combined machines for storage, reaction and impregnation	1.3.2.2	Machines for storage and reaction
1.2.2.3.1	— with perforated rotating roller and liquor circulation	1.3.2.2.1	— in rope form (J Box)
1.3	Equipment for bleaching	1.3.2.2.2	— in open width without batching
1.3.1	<i>Bleaching apparatus</i>	1.3.2.2.2.1.1	... in saturated steam without pressure
1.3.1.1	Open bleaching vessels	1.3.2.2.2.1.2	... with J Box
1.3.1.1.1	— for loose material	1.3.2.2.2.1.3	... with plaiting on a conveyor
1.3.1.1.2	— for slivers and tow	1.3.2.2.2.2	... with passage in a zigzag course
1.3.1.1.3	— for yarns	1.3.2.2.2.2.1	... in saturated steam under pressure
1.3.1.1.3.1	... in hank form	1.3.2.2.2.2.2	... with J Box
1.3.1.1.3.2	... on cheese or cones	1.3.2.2.2.2.3	... with plaiting on a conveyor
1.3.1.1.3.3	... in warp form	1.3.2.2.2.3	... with passage in a zigzag course
1.3.1.1.4	— for woven and knitted fabrics	1.3.2.2.2.3.1	... in superheated steam
1.3.1.1.4.1	... in rope form	1.3.2.2.2.3.2	... with J Box
1.3.1.1.4.2	... in open width	1.3.2.2.2.3.3	... with plaiting on a transporter
1.3.1.2	Apparatus for bleaching in autoclaves	1.3.2.2.3	... with passage in a zigzag course
1.3.1.2.1	— for loose material	1.3.2.2.3.1.1	— in open width with batching
		1.3.2.2.3.1.2	... in saturated steam without pressure
		1.3.2.2.3.1.3	... continuous
		1.3.2.2.3.2	... discontinuous
			... in saturated steam under pressure

CLASSIFICATION No.	NOMENCLATURE	CLASSIFICATION No.	NOMENCLATURE
1.3.2.2.3.2.1	... continuous	2.1.2	<i>Harrow type washing machines</i>
1.3.2.2.3.2.2	discontinuous	2.1.3	<i>Oval washing machines</i>
1.3.2.2.3.3	... in superheated steam	2.1.4	<i>Apparatus with circulation of the liquor</i>
1.3.2.2.3.3.1	... continuous	2.1.4.1	— open type
1.3.2.2.3.3.2	... discontinuous	2.1.4.2	— under pressure
1.3.2.3	Machines for impregnation, storage and reaction	2.2	Equipment for washing tow and yarn
1.3.2.3.1	— with revolving perforated roller and circulation of the liquor	2.2.1	<i>Machines for washing hanks</i>
1.3.3	<i>Equipment for bleaching by gas (stoving)</i>	2.2.1.1	— with hank holders
1.4	Equipment for mercerizing	2.2.1.1.2	... with spraying
1.4.1	<i>Equipment for mercerizing yarns</i>	2.2.1.2	... without spraying (washing)
1.4.1.1	— in hanks (mercerizer for hanks)	2.2.2	machines with bottles)
1.4.1.2	— in warp form (mercerizer for warps)	2.2.2.1	— with conveyor (washing machines with conveyor)
1.4.2	<i>Equipment for mercerizing fabrics</i>	2.2.2.1.1	<i>Apparatus with circulation of the liquor</i>
1.4.2.1	Mercerizers without chain	2.2.2.1.2	— open type
1.4.2.2	Mercerizers with chain	2.2.2.1.3	... in hanks
2	EQUIPMENT FOR WASHING¹⁾	2.2.2.2	... on cheeses or cones
2.1	Equipment for washing loose material	2.2.2.2.1	... in warp form
2.1.1	<i>Fork type washing machines</i>	2.2.2.2.2	— under pressure
		2.2.2.2.3	... in hanks
		2.3	... on cheeses or cones
		2.3.1	... in warp form
		2.3.1.1	Equipment for washing woven and knitted fabrics¹⁾
			<i>Machines for washing in rope form</i>
			— continuous
			1) Machines for washing, and milling simultaneously appear in clause 3.5.
			Machines for washing, shaping, dyeing finishing and drying stockings on formers appear in clause 4.1.2.5.

CLASSIFICATION No.	NOMENCLATURE	CLASSIFICATION No.	NOMENCLATURE
2.3.1.1.1	... with winch (becks for fabrics in rope form)	3.1	Equipment for carbonizing wool
2.3.1.1.2	... with squeezing (for fabrics in rope form)	3.1.1	<i>For loose material</i>
2.3.1.1.3	... in J, Z or other course	3.1.1.1	Becks for acidifying (scourer)
2.3.1.2	— discontinuous	3.1.1.2	Mangling machiness (drying press)
2.3.1.2.1	... with winch (becks for fabrics in rope form)	3.1.1.3	Hydro-extractors (centrifuges)
2.3.1.2.2	... with squeezing (for fabrics in rope form)	3.1.1.4	Drying and carbonizing machines (carbonizer)
2.3.2	<i>Open width washing machines</i>	3.1.1.5	Machines for beating and crushing (beater crusher)
2.3.2.1	— continuous	3.1.1.6	Machines for neutralizing and rinsing (neutralizer)
2.3.2.2	— discontinuous	3.1.2	<i>For fabrics</i>
2.3.2.2.1	... with winch (becks for fabrics in open width)	3.1.2.1	Becks for acidifying
2.3.2.2.2	... with squeezing (for fabrics in open width)	3.1.2.1.1	— in rope form (acidifier for fabrics in rope form)
2.3.2.2.3	... in a spiral course (vertical or horizontal star)	3.1.2.1.2	— in open width (acidifier for fabrics in open width)
2.3.2.2.4	... on perforated rotating roller	3.1.2.2	Mangles (mangle)
2.3.2.2.5	... Jiggers	3.1.2.3	Machines for suction extraction (suction extractor)
2.3.3	<i>Cylinder washing machines</i>	3.1.2.4	Machines for drying and carbonizing
2.3.4	<i>Paddle washing machines</i>	3.1.2.4.1	— in hot air (carbonizing oven)
2.3.5	<i>Apparatus with circulation of the liquor</i>	3.1.2.4.2	— with drying drum
2.3.5.1	— open type	3.1.2.5	Milling machines
2.3.5.2	— under pressure	3.1.2.6	Machines for neutralizing and rinsing
3	EQUIPMENT FOR SPECIAL PROCESSES FOR WOOL (CARBONIZING, PRE-SETTING, SMOOTHING, CHLORINATION, NON-FELTING PROCESSES) AND FOR HEAT TREATMENT FOR SYNTHETIC TEXTILES (SETTING AND SHAPING)	3.1.2.6.1	— in rope form (neutralizers for fabrics in rope form)
		3.1.2.6.2	— in open width (neutralizers for fabrics in open width)
		3.2	Equipment for pre-setting wool
		3.2.1	<i>Machines for pre-setting¹⁾ (crabbing)</i>
		3.2.2	<i>Equipment for pre-setting²⁾</i>
			1) With displacement of the fabric in hot water. 2) With circulation of the water or steam and without back grey.

CLASSIFICATION No.	NOMENCLATURE	CLASSIFICATION No.	NOMENCLATURE
3.2.2.1	— with hot water	3.6.1.1	— by hot air
3.2.2.2	— with steam (blowing)	3.6.1.1.1	... with retention of the width (thermo-setting stenters)
3.3	Equipment for smoothing wool	3.6.1.1.2	... without retention of the width
3.3.1	— with drying on perforated drums	3.6.1.1.2.1	thermo-setting by hot air in a horizontal path
3.3.2	— with drying on heated cylinders	3.6.1.1.2.2	thermo-setting by hot air in a vertical path
3.3.3	— with drying on a platform	3.6.1.1.2.3	thermo-setting by hot air in a zigzag path
3.4	Equipment for chlorination and for non-felting treatment of wool	3.6.1.1.2.4	thermo-setting by hot air with perforated drums
3.4.1	<i>Equipment for chlorination</i>	3.6.1.2	— by superheated steam
3.4.1.1	— in aqueous medium	3.6.1.2.1	... with retention of the width (thermo-setting stenters with injection of steam)
3.4.1.2	— in dry gas (chlorination chambers)	3.6.1.2.2	... without retention of the width
3.4.1.3	— in solvent medium	3.6.1.2.2.1	thermo-setting by superheated steam in a horizontal path
3.4.2	<i>Equipment for processing by electric discharge</i>	3.6.1.2.2.2	thermo-setting by superheated steam in a vertical path
3.4.2.1	Machines for processing in a vacuum	3.6.1.2.2.3	thermo-setting by superheated steam in a zigzag path
3.4.2.2	Machines for processing at atmospheric pressure	3.6.1.2.2.4	thermo-setting by superheated steam with perforated drums
3.5	Equipment for milling wool¹⁾	3.6.2	<i>With setting by radiation. (infra red thermo-setting)</i>
3.5.1	<i>Milling machines</i>	3.6.3	<i>With setting by surface contact</i>
3.5.1.1	— with rollers (roller milling machines)	3.6.3.1	— with cylinders (thermo-setting with cylinders)
3.5.1.2	— with hammers (Milling stocks)	3.6.3.2	— with fluid bed (fluid bed thermo-setting)
3.5.1.3	— continuous	3.6.3.3	— with molten metal bath (molten metal thermo-setting)
3.5.2	<i>Machines for milling and scouring²⁾</i>	3.6.4	<i>With shaping with water (hot thermo-setting)</i>
3.6	Equipment for heat treatment for synthetic textiles³⁾		
3.6.1	<i>With setting by convection</i>		

1) Milling in a solvent medium may be effected with the aid of drycleaning equipment.
 2) These machines are generally used for a light milling.
 3) For equipment for setting fibres refer to the document dealing with spinning equipment.

CLASSIFICATION No.	NOMENCLATURE	CLASSIFICATION No.	NOMENCLATURE
3.6.4.1	— without pressure (hot water post-shaping)	4.1.2.5.1	... by immersion
3.6.4.2	— under pressure (pre-shaping autoclave)	4.1.2.5.2	... by spraying
3.6.5	<i>With shaping with saturated steam under pressure</i>	4.2	Dyeing machines
4	DYEING EQUIPMENT	4.2.1	<i>For slivers and tow</i>
4.1	Dyeing apparatus	4.2.1.1	— by impregnation and mangle expression (dyeing padding mangles for sliver and tow)
4.1.1	<i>Apparatus for dyeing in open vessel</i>	4.2.1.2	— by spraying
4.1.1.1	— for loose material	4.2.2	<i>For yarns</i>
4.1.1.2	— for slivers and tow	4.2.2.1	— in hanks
4.1.1.3	— for yarns	4.2.2.1.1	... with hank holders
4.1.1.3.1	... in hanks	4.2.2.1.1.1	... by partial immersion
4.1.1.3.2	... on cheeses cones beams or cakes	4.2.2.1.1.2	... by total immersion
4.1.1.3.3	... in warp form	4.2.2.1.2	... with rotating holders
4.1.1.4	— for woven and knitted fabrics in open width	4.2.2.1.2.1	... without circulation of the liquor
4.1.2	<i>Pressure dyeing apparatus in autoclaves</i>	4.2.2.1.2.2	... with circulation of the liquor
4.1.2.1	— for loose material	4.2.3	<i>For woven and knitted fabrics</i>
4.1.2.2	— for slivers and tow	4.2.3.1	— discontinuous
4.1.2.3	— for yarns	4.2.3.1.1	... by winch (winch becks)
4.1.2.3.1	... in hanks	4.2.3.1.1.1	circular
4.1.2.3.2	... on cheeses, cones, beams, or cakes	4.2.3.1.1.1.1	... without excess pressure
4.1.2.3.3	... in warp form	4.2.3.1.1.2	... with excess pressure
4.1.2.4	— for woven and knitted fabrics in open width	4.2.3.1.1.2.1	elliptical
4.1.2.5	for knitted goods and stockings on formers ¹⁾	4.2.3.1.1.2.2	... without excess pressure
		4.2.3.1.2	... with excess pressure
		4.2.3.1.3	... with perforated rotating drums
		4.2.3.1.3.1	... with paddles
		4.2.3.1.3.2	... without pressure
		4.2.3.1.4	... with pressure
		4.2.3.1.4.1	... with star wheels
		4.2.3.1.4.2	(star wheel becks)
		4.2.3.1.5	... vertical
			... horizontal
			Jigger

1) Certain types of this apparatus serve to effect several operations successively such as washing, shaping, dyeing, rinsing, finishing, drying.

CLASSIFICATION No.	NOMENCLATURE	CLASSIFICATION No.	NOMENCLATURE
4.2.3.1.5.1	... without excess pressure	5.3.1.2.1.1	... with a fixed position screen
4.2.3.1.5.1.1	without hood	5.3.1.2.1.2	... with movable screen
4.2.3.1.5.1.2	with hood	5.3.1.2.2	... for printing with a rotating screen (rotary screen printing)
4.2.3.1.5.2	... with excess pressure	5.3.2	<i>Roller printing</i>
4.2.3.1.6	... with jets	5.3.2.1	— by relief engraving
4.2.3.2	— continuous	5.3.2.2	— by intaglio engraving
4.2.3.2.1	... by impregnation and mangling (dyeing padding mangle)	5.3.2.3	— by roller coloured en masse
4.2.3.2.2	... by spraying	5.3.3	<i>Equipment for spray printing</i>
4.2.3.2.3	with molten metal bath	5.3.4	<i>Printing equipment by transfer from an intermediary support (thermo-printing)</i>
4.2.3.2.4	... in organic solvent medium		
5	PRINTING EQUIPMENT¹⁾	5.4	Ancillary equipment
5.1	Printing equipment for slivers or cake (Vigoureux machines)	5.4.1	<i>Printing dryers</i>
5.2	Printing equipment for yarns	5.4.1.1	— for printed fabrics
5.2.1	<i>Machines for printing hanks</i>	5.4.1.1.1	... in hot air
5.2.2	<i>Machines for printing cheeses</i>	5.4.1.1.2	... in a horizontal course
5.2.2.1	— with circulation and covers	5.4.1.1.3	... in a spiral course
5.2.2.2	— with hollow needles	5.4.1.1.2	... by a drying carriage for table printing
5.2.3	<i>Machines for printing warps</i>	5.4.1.1.3	... by radiation (infra-red drying carriages for table printing)
5.3	Printing equipment for woven and knitted fabrics²⁾	5.4.1.2	... by contact (print drying cylinders)
5.3.1	<i>Screen printing</i>	5.4.1.2.1	— for back greys
5.3.1.1	— manual: printing tables and carriages	5.4.1.2.2	in hot air
5.3.1.2	— automatic	5.4.2	by contact
5.3.1.2.1	... for printing with a flat screen	5.4.3	<i>Machines for engraving the printing rollers</i>
		5.4.4	<i>Cookers for thickeners</i>
		6	<i>Machines for straining the colour pastes</i>
	1) Steaming equipment appears in clause 6.1.2.		EQUIPMENT FOR COLOUR FIXATION BY STEAMING AND THERMOSOL TREATMENT
	2) Equipment for printing selvedges appears in clause 10.6.		

CLASSIFICATION No.	NOMENCLATURE	CLASSIFICATION No.	NOMENCLATURE
6.1	Steaming equipment	6.1.2.2	— continuous
6.1.1	<i>For dyeing</i>	6.1.2.2.1	... for long steaming (festoon steamers)
6.1.1.1	— in saturated steam without pressure	6.1.2.2.2	... for rapid steaming
6.1.1.1.1	... discontinuous on rotating rollers ¹⁾	6.1.2.2.2.1	... in a zigzag course (Mather and platt system)
6.1.1.1.2	... in " steam chests "	6.1.2.2.2.2	... in neutral vapour
6.1.1.1.3	... continuous in a zigzag course ²⁾	6.1.2.2.2.3	... in acid vapour
6.1.1.2	— under pressure	6.1.2.2.2.4	... in a spiral course (Krostewitz system)
6.1.1.2.1	— discontinuous on rotating rollers in " steam chests "	6.1.2.2.3	... for flash ageing
6.1.1.2.2	— continuous in a zigzag course	6.2	Equipment for heat treatment
6.1.1.3	— in superheated steam	6.2.1	<i>in hot air</i>
6.1.1.3.1	... discontinuous	6.2.1.1	— with retention of the width (stenters for heat setting colour fixation and polymerising with injection of steam)
6.1.1.3.2	... continuous	6.2.1.2	— without tension
6.1.1.3.2.1	with retention of the width (stenters for heat-setting colour fixation and polymerising with injection of steam)	6.2.1.2.1	... in a horizontal path
6.1.1.3.2.2	without retention of the width	6.2.1.2.2	... in a vertical path
6.1.1.3.2.2.1	... in a horizontal course	6.2.1.2.3	... in a zigzag path
6.1.1.3.2.2.2	... in a vertical course	6.2.1.2.3.1	... for polymerizing
6.1.1.3.2.2.3	... in a zigzag course	6.2.1.2.3.2	... for heat-setting the pigments
6.1.1.3.2.2.4	... with perforated drums	6.2.1.2.3.3	... for development of the colours by oxidation
6.1.2	<i>For printing</i>	6.2.1.2.4	... on perforated drums
6.1.2.1	— discontinuous	6.2.2	<i>by radiation</i>
6.1.2.1.1	... in an autoclave	6.2.3	<i>by contact</i>
6.1.2.1.1.1	... with the fabric festooned	6.2.3.1	— between a single cylinder and an endless belt (reactor)
6.1.2.1.1.2	... with the fabric rolled on perforated drums (universal steamers)	6.2.3.2	— with multiple drums
6.1.2.2.1.3	... with the fabric fixed on a star frame	6.2.3.3	— with fluid-bed
		6.2.4	<i>by immersion</i>
		6.2.4.1	— in a molten metal bath (Standfast system)

1) Part of the installation called in English "Pad roll".

2) Part of the installation called in English "Pad steam".

CLASSIFICATION No.	NOMENCLATURE	CLASSIFICATION No.	NOMENCLATURE
6.2.4.2	— in a bath of paraffin (Williams system)	7.2.1.3.2.4	... in suspended folds (festoon dryers) with perforated drums
7	DRYING EQUIPMENT	7.2.1.3.2.5	by radiation (<i>infra-red dryers</i>)
7.1	Equipment for the elimination of water by mechanical means	7.2.2	by contact
7.1.1	<i>Mangling machines (drying mangles)</i>	7.2.3	— between a single cylinder and an endless belt (<i>felt calenders</i>)
7.1.2	<i>Machines for hydro extraction (centrifugal extraction)</i>	7.2.3.1	— with multiple drums (<i>drum dryers</i>)
7.1.2.1	Centrifugal machines with fixed basket	7.2.3.2	by high frequency
7.1.2.2	Centrifugal machines with removable basket	7.2.4	
7.1.3	<i>Suction extractors (suction extractors in open width)</i>	8	EQUIPMENT FOR WETTING AND DAMPING
7.2	Equipment for the elimination of water by evaporation with heat in hot air	8.1	Equipment for wetting with water
7.2.1	— for loose material slivers ¹⁾ and tow	8.1.1	by spraying with brushes (<i>brush damper with brushes</i>)
7.2.1.1	— for yarns	8.1.1.1	— on a single face
7.2.1.2	— in hanks	8.1.1.2	— on two faces
7.2.1.2.1	... on cheeses or cones	8.1.2	by spraying with jets (<i>mist damper</i>)
7.2.1.2.2	— for fabrics	8.1.2.1	— on a single face
7.2.1.3	— under tension (<i>drying stenters</i>)	8.1.2.2	— on two faces
7.2.1.3.1	... on a flat path (<i>drying stenters</i>)	8.2	Equipment for damping with steam (damping with steam)
7.2.1.3.1.1	... in tiers (<i>drying stenters in tiers</i>)	9	FINISHING EQUIPMENT
7.2.1.3.1.2	... without tension	9.1	Finishing equipment for application of finishing agents
7.2.1.3.2	... in a horizontal course	9.1.1	for woven and knitted fabrics in bulk
7.2.1.3.2.1	... in a vertical course	9.1.1.1	— in aqueous medium
7.2.1.3.2.2	... by hot flue	9.1.1.2	— in solvent medium
7.2.1.3.2.3		9.1.2	for woven and knitted fabrics in open width
		9.1.2.1	— by impregnation and mangling (<i>padding and impregnating machines</i>)

1) For the drying of slivers, see also clause 3.3.

CLASSIFICATION No.	NOMENCLATURE	CLASSIFICATION No.	NOMENCLATURE
9.1.2.2	— by spraying	9.3.9	<i>Calenders for tubular knitted fabrics</i>
9.1.2.3	— by spreading with a doctor blade	9.4	Raising equipment
9.1.2.3.1	padding mangles with doctor blades	9.4.1	<i>Raising with vegetable teasels</i>
9.1.2.3.2	coating machines	9.4.1.1	Raising with fixed teasels
9.1.2.4	— by printing with engraved rollers (dots or lines)	9.4.1.2	Raising with revolving teasels
9.1.2.5	— for back filling (back fillers)	9.4.2	<i>Raising with metal teasels</i>
9.1.2.6	— by treatment in solvent medium	9.4.3	<i>Raising with card wire</i>
9.1.2.7	— for polymerization (polymerizing equipment)	9.5	Equipment for shearing and cropping
9.2	Softening equipment	9.5.1	<i>Shearing machines</i>
9.2.1	<i>for yarns (softeners, stretchers and polishers for hanks)</i>	9.5.1.1	— by continuous action in the lengthwise direction
9.2.2	<i>for woven and knitted fabrics</i>	9.5.1.1.1	— on a hollow bed
9.2.2.1	— by studded rollers (button breakers)	9.5.1.1.2	— on a pointed bed
9.2.2.2	— by scroll rollers (scroll breakers)	9.5.1.1.3	— on cylinders with an engraved cutting pattern (for velours)
9.3	Calendering equipment	9.5.1.2	— by discontinuous action
9.3.1	<i>Conventional calenders</i>	9.6	Equipment for decatizing, stabilizing or modifying the dimensions
9.3.2	<i>Special calenders for chasing in several fabric thicknesses</i>	9.6.1	Decatizers
9.3.3	<i>Friction calenders</i>	9.6.1.1	— potting
9.3.4	<i>Embossing calenders</i>	9.6.1.2	— crabbing jack
9.3.5	<i>Calenders for beating velours (velvets)</i>	9.6.1.3	— decatizing with steam
9.3.6	<i>Calenders for simili mercerising (simili mercerising)</i>	9.6.2	<i>Machines for shrinkage by controlled compression</i>
9.3.7	<i>Moiré calenders</i>	9.6.2.1	— on a felt ' blanket '
9.3.7.1	— by compression by a fabric roller (mangle)	9.6.2.2	— on a rubber belt
9.3.7.2	— by engraved roller	9.6.2.3	— between drums
9.3.7.3	— by passage of two layers of fabrics between rollers	9.6.3	<i>Machines for adjusting the width</i>
9.3.8	<i>Beetle calenders</i>	9.6.3.1	<i>Stenters for straightening</i>
		9.6.3.2	<i>Device for straightening the yarn</i>
		9.6.4	<i>Machines for relaxing knitted fabrics</i>
		9.6.5	<i>Machines for the forming of knitted fabrics</i>

CLASSIFICATION No.	NOMENCLATURE	CLASSIFICATION No.	NOMENCLATURE
9.7	Equipment for sundry effects	10.6	Equipment for printing selvedges
9.7.1	<i>Presses</i>	10.7	Equipment for marking
9.7.1.1	— presses with wrappers (covers)	10.8	Equipment for packing
9.7.1.2	— cloth finishing presses	11	ADDITIONAL EQUIPMENT
9.7.1.3	— flat presses	11.1	Presses for loose material
9.7.1.3.1	... for intermittent treatment	11.2	Machines for winding woven or
9.7.1.3.2	... for continuous treatment	11.3	knitted fabric onto perforated
9.7.2	<i>Brushing machines</i>	11.4	beams for dyeing
9.7.3	<i>Pleating machines (pleaters)</i>	11.5	Machines for gumming selvedges
9.7.4	<i>Flocking machines</i>	11.6	Machines for cutting selvedges
9.7.5	<i>Friezing machines</i>	11.6.1	Machines for slitting
9.7.6	<i>Machines for sueding (energy-sueding</i> <i>machines)</i>	11.6.2	Machines for slitting open tubular knitted fabrics
9.7.7	<i>Machines for waxing (waxing machines)</i>		— without gumming of the selvedges
9.7.8	<i>Shearing machines for velours (velvets)</i>		— with gumming of the selvedges
9.7.9	<i>Machines for smoothing velours</i>	11.7	Machines for turning knitted fabrics inside out
10	MACHINES FOR MEASURING, INSPECTING, MARKING AND PACKING	11.8	Machines for opening fabrics from rope form (scutchers)
10.1	Machines for inspection (inspection machines)		
10.2	Machines for measuring		
10.3	Machines for rolling (batches)		
10.4	Machines for plaiting (plaiters)		
10.5	Machines for folding (folding machines)		

INDIAN STANDARDS
ON
DYEING AND FINISHING MACHINERY

IS :

- 4893-1968 Perforated stainless steel cones for wet processing
- 7668-1975 Definition of side (left or right) of dyeing and finishing machines
- 7951-1976 Beams for dyeing fibres, yarns and fabrics
- 7952-1976 Nominal widths of textile finishing machines for treatment of textile fabrics in open width
- 8014-1983 Classification and nomenclature of dyeing and finishing machinery (*first revision*)
- 8304-1977 Wooden winding rollers for textile finishing machines
- 8333-1977 Perforated cylindrical tubes for cheese dyeing
- 9102 (Parts I and II)-1979 Rubber blankets for shrinking range
- 9765-1981 Terminology of stenters